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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/564,359

01/12/2006

Naoto Hirotsaki

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EXAMINER

KOSLOW, CAROL M

ART UNIT

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1793

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/564,359	Applicant(s) HIROSAKI, NAOTO	
	Examiner C. Melissa Koslow	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1- 21 is/are rejected.
- 7) ☒ Claim(s) 22 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>1/12/06</u> . | 6) <input type="checkbox"/> Other: ____. |

The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

The abstract of the disclosure is objected to because it contains two paragraphs. Correction is required. See MPEP § 608.01(b).

Claims 1, 4 and 8 are objected to because of the following informalities: In claim 8, "one" is misspelled. In claims 1, 4 and 8, it is suggested to replace "one or two or more" with "one or more" since both phrases have the same meaning and the second is more grammatically correct. Appropriate correction is required.

Claims 13, 14, 16, 17 and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 13 is improperly dependent on claim 1 since claim 1 does not teach the claimed $\text{La}_3\text{Si}_{8-x}\text{Al}_x\text{N}_{11-x}\text{O}_{4+x}$ crystal phase. Claims 16 and 17 are improperly dependent upon claim 14. Claim 14 teaches a light device comprising the phosphor of claim 1, but claims 16 and 17 teaches the phosphor is one of claims 1-13. Finally, claims 14 and 21 are indefinite since it is unclear if the fluorescent material of claim 1 is the part of the initially claimed fluorescent material. It is suggested to rewrite the claims so they state "...a fluorescent material, wherein the

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fluorescent material comprises the material recited in claim 1.", or similar language to overcome this rejection.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2 and 7-13 are rejected under 35 U.S.C. 102(b) as being anticipated by van Krevel.

This reference teaches fluorescent Tb doped $\text{La}_3\text{Si}_8\text{N}_{11}\text{O}_4$. Page 76 teaches a small amount of LaSiO_2N is present, which indicates that the material contains at least 50 wt% of Tb doped $\text{La}_3\text{Si}_8\text{N}_{11}\text{O}_4$. Page 80 teaches the amount of terbium is 5 at%. Thus the formula for material can be written as $\text{Tb}_{0.05}\text{La}_3\text{Si}_8\text{N}_{11}\text{O}_4$. This formula falls within that of claim 8. The reference teaches the claimed material.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 14 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over van Krevel.

As discussed above, this reference teaches the claimed material. The reference teaches the material is excited at about 254 nm. One of ordinary skill in the art would have found it obvious to use the taught phosphor in a light device or an image display device where the light

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emission source or excitation source emits radiation of 254 nm. The reference suggests the claimed devices.

Claims 1-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent application publication 2006/0049414.

This reference teaches a fluorescent material having the formulas $\text{Ln}_{3-x}\text{M}_x(\text{Si},\text{Ge})_8\text{N}_{11-x}\text{O}_{4+x}:\text{RE}$ and $\text{Ln}_3(\text{Si},\text{Ge})_8\text{Al}_x\text{N}_{11-x}\text{O}_{4+x}:\text{RE}$, where Ln is Lu, Y, La, Gd and/or Sc, M is at least one of Ca, Ba, Sr and Zn, $x=0-3$ and RE is at least one of Ce, Tb, Pr, Dy, Sm, Eu, Mn and Bi. It is clear for the reference that (Si,Ge) means the materials contains Si and/or Ge. Thus the reference teaches fluorescent materials having the formulas $\text{La}_3\text{Si}_8\text{N}_{11}\text{O}_4:\text{RE}$ and $\text{La}_3\text{Si}_8\text{Al}_x\text{N}_{11-x}\text{O}_{4+x}:\text{RE}$, where $0 < x \leq 3$ and RE is at least one of Ce, Tb, Pr, Dy, Sm, Eu and Mn. The reference does not teach that the fluorescent material contains more than phase and thus it implicitly teaches the material has a single phase and meet the requirements of claim 13. Paragraph 60 teaches the amount of RE is at most 20%. Accordingly, the suggested formulas can be written as $\text{La}_3\text{Si}_8\text{N}_{11}\text{O}_4:y\text{RE}$ and $\text{La}_3\text{Si}_8\text{Al}_x\text{N}_{11-x}\text{O}_{4+x}:y\text{RE}$, where $0 < y \leq 0.2$, which overlaps the range of claim 8. Product claims with numerical ranges which overlap prior art ranges were held to have been obvious under 35 USC 103. *In re Wertheim* 191 USPQ 90 (CCPA 1976); *In re Malagari* 182 USPQ 549 (CCPA 1974); *In re Fields* 134 USPQ 242 (CCPA 1962); *In re Nehrenberg* 126 USPQ 383 (CCPA 1960). The reference teaches lighting devices comprising the suggested fluorescent material and an LED, which emits radiation in the range of 250-550 nm, which overlaps the claimed range. The reference teaches the suggests fluorescent material can be mixed with other phosphors so as to produce a white light emitting device. White light emitting devices are known to comprising a UV emitting LED, and a phosphor mixture of red, blue and green

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phosphors or a mixture of yellow and blue phosphors. Thus depending upon the color emitted by the suggested fluorescent material, it would be obvious to select complementary phosphors which were known at the time of invention, such as yellow YAG, Ca- α -sialon phosphor or the phosphors of paragraphs 91 and 92; or a mixture of red and green phosphors, such as red phosphor selected from CaAlSiN₃:Eu or one of the red phosphors of paragraphs 93-102 and a green phosphor selected from those in paragraphs 81-90 or β -sialon:Eu, when the suggested phosphor emits blue light, so as to produce a white light emitting device. The reference suggests the material and device of claims 1-20.

While the reference does not teach an image display device, the claimed lighting device is known to be used as backlighting in LCD, which are image display devices. Thus one of ordinary skill in the art would have found it obvious to use the suggested device in an image display device. The reference suggests the claimed device.

The taught subject matter which suggests the claimed material and device has the effective filing date of 14 September 2004 since it is disclosed in provisional application 60.609,859, upon which U.S. patent application publication 2006/0049414 claims priority.

Claim 22 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

There is no teaching or suggestion in the cited art of record that the claimed fluorescent material can be used in an image display device of claim 22, nor that the material is excited by cathode rays, electrons or VUV, which are the exciting sources of image display devices of claim 22.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa Koslow whose telephone number is (571) 272-1371. The examiner can normally be reached on Monday-Friday from 8:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached at (571) 272-1233.

The fax number for all official communications is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/cmk/
April 24, 2008

/C. Melissa Koslow/
Primary Examiner
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